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Contents: Identification of Significant Environmental Aspects and Impacts

Effective Date: April 2001

Point of Contact: [Management Representative on EMS](#)

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1. Identification of Significant Environmental Aspects and Impacts	<ul style="list-style-type: none"> List processes that impact environment. Document process evaluation or experimental review. Identify "core" and "facility-specific" aspects. Maintain and submit documentation.
2. Establishing and Implementing Environmental Objectives	<ul style="list-style-type: none"> Review processes that impact environment. Present objectives, targets, and performance measures; obtain concurrence. Document objectives, targets, and performance. Develop action plan to achieve objectives. Use existing systems to meet objectives and targets.
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Training Requirements and Reporting Obligations

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This subject area does not contain reporting obligations.

References

40 CFR 61 Subpart H, National Emission Standards for Emissions of Radionuclides Other than Radon from Department of Energy (DOE) Facilities

[Accelerator Safety](#) Subject Area

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[EMS Representatives Page](#) (*Limited Access)

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ISO 14004, Environmental Management Systems: General Guidelines on Principles, Systems and Supporting Techniques

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Introduction: Identification of Significant Environmental Aspects and Impacts

Effective Date: **May 2000**

Point of Contact: [Management Representative on EMS](#)

Based on the status of environmental performance, regulatory compliance, and community/stakeholder concerns, Brookhaven National Laboratory (BNL) has determined that the following "core" environmental aspects are significant to the Laboratory environmental profile because of their potential to impact the environment:

- Waste generation - regulated industrial, hazardous, radioactive, mixed, or regulated medical waste;
- Atmospheric emissions;
- Liquid effluents;
- Storage or use of chemicals and radioactive materials (potential for accidental release or contamination);
- Natural resource usage - power consumption, water consumption.

In addition to this core list, Directorates/Departments/Divisions may have other "facility-specific" environmental aspects that are significant, but unique to their facilities, operations, or research. These may include the following examples:

- Transuranic waste generation;
- Historical monuments/cultural resources;
- Environmental noise;
- Odors;
- Disturbances to endangered species or protected habitats;
- Soil activation;
- Historical contamination.

The purpose of this procedure is to identify Directorate/Department/Division processes (i.e., industrial or experimental activities, products, or services) and their associated environmental aspects, and to determine the ones that are significant contributors to the BNL environmental profile. This procedure provides a mechanism to document these aspects and, if significant, ensures the development of programs to manage the activity and prevent an impact. The potential impacts associated with these significant aspects were identified and are shown in the exhibit [Environmental Aspects and Impacts](#). By definition, any process with environmental regulatory requirements is "significant" for the purposes of the BNL Environmental Management System (EMS).

Environmental Management System (EMS).

This procedure is a required element of ISO 14001 and the BNL Environmental Management System (EMS) and primarily uses the technical analysis performed in the [Process Assessment](#) Subject Area, but also relies on other hazard analysis techniques for planning and controlling work. Once significant environmental aspects have been identified, Directorates/Departments/Divisions establish specific objectives, targets, and performance measures for improvement that are consistent with the Laboratory Critical Outcomes, and an action plan to achieve those objectives is developed and implemented.

The Laboratory's list of significant environmental aspects will be periodically reviewed and revised as necessary during the Environmental Management Review process, including consideration of facility-specific aspects for Lab-wide applicability; revisions to legal and other requirements; and changes to Laboratory Critical Outcomes, Objectives, and Performance Measures.

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Subject Area: Identification of Significant Environmental Aspects and Impacts

1. Identification of Significant Environmental Aspects and Impacts

Effective Date: **April 2001**

Point of Contact: [Management Representative on EMS](#)

Applicability

This information applies to the Associate/Assistant Laboratory Directors (ALDs) who are responsible for ensuring that this procedure is performed within their respective organizations to maintain the Environmental Management System's (EMS) list of significant environmental aspects.

Required Procedure

This procedure identifies Directorate/Department/Division processes (i.e., industrial or experimental activities, products, or services) that have environmental aspects that can significantly impact the environment and yet are also within BNL's control. This evaluation is performed initially as part of EMS implementation and then reviewed annually, documented, and revised as needed when (1) operational changes result in new activities, products, or services; (2) changes in legal or other requirements affect the applicability of the significance criteria; or (3) there are changes in the Laboratory Critical Outcomes, Objectives, and Performance Measures. The Management Representative on EMS coordinates the execution of this procedure, and is responsible for reviewing and concurring on the results of the aspects analysis.

Step 1	<p>Management Representative on EMS, Cross Sectional Team, or Designee: List the processes performed within the Directorate/Department/Division that can impact the environment on the Environmental Aspect Analysis Form.</p> <p>Note: Refer to the evaluation of processes conducted in accordance with the Process Assessment Subject Area and, as applicable, activities evaluated through the Experimental Safety Review, Work Planning and Control process (see the Work Planning and Control for Experiments and Operations Subject Area), and other work planning tools such as a Standard Operating Procedure (SOP) and Accelerator Safety Assessment Document (SAD) Template in the</p>
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	<p>Accelerator Safety Subject Area. Consider the goods and services provided by contractors and suppliers.</p> <p>Note: The exhibit Laboratory Processes that have the Potential to Impact the Environment lists the Laboratory processes that have the potential to impact the environment or may have regulated environmental aspects. This list is intended to be a generic listing that is used by the team performing this procedure as a reference to assist them in developing their Directorate/Department/Division specific list.</p>
Step 2	<p>Management Representative on EMS, Cross Sectional Team, or Designee: Determine if the environmental hazards associated with the process have been evaluated and documented. If not, document a process evaluation or experimental review (or other applicable evaluation) as required.</p>
Step 3	<p>Management Representative on EMS, Cross Sectional Team, or Designee: For each process, identify the "core" and "facility-specific" environmental aspect (s). When performing these analyses, consider the following operating conditions as applicable: (1) normal, (2) shutdown, (3) maintenance. Compare each aspect to the significance criteria on the exhibit BNL Criteria for Significant Aspects and document the results of each comparison on the Environmental Aspect Analysis Form as follows.</p> <ol style="list-style-type: none"> 1. If the aspect is not present, leave the cell on the form blank. 2. If the aspect is present but does not meet the significance criteria listed on the BNL Criteria for Significant Aspects, put an "X" in the cell. 3. If the aspect meets one or more of the significance criteria, enter the letter designation of the applicable criteria in the cell. For example, put an "a" in the cell in the Atmospheric Discharges column, if the activity requires a point source air permit. <p>Consider potential aspects unique to the Directorate/Department/Division facilities or processes that have not been identified as part of the core list of Laboratory aspects (e.g., transuranic waste generation, historical monuments/cultural resources, environmental noise, odors, disturbances to endangered species or protected habitats, soil activation, and historical contamination). Add the applicable facility-specific aspects to the header row on the Environmental Aspect Analysis Form in the "other" column, and assign the letter designations as defined above.</p> <p>Note: By definition, any process with environmental regulatory requirements is "significant" for the purposes of the BNL Environmental Management System (EMS).</p>
Step 4	<p>Management Representative on EMS: Maintain the completed Environmental Aspect Analysis Form with Directorate/Department/Division EMS documentation. Submit a copy of the completed (and or revised) form to the Environmental Management System Project Manager or communicate via web page.</p>

Guidelines

This procedure should be performed by a multidisciplinary staff who are knowledgeable about Directorate/Department/Division processes and environmental issues. An [Environmental Compliance Representative](#) should participate. Managers may elect to have a standing interdisciplinary committee perform this procedure.

References

[Accelerator Safety](#) Subject Area

[Process Assessment](#) Subject Area

[Work Planning and Control for Experiments and Operations](#) Subject Area


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Subject Area: Identification of Significant Environmental Aspects and Impacts

2. Establishing and Implementing Environmental Objectives

Effective Date: **April 2001**

Point of Contact: [Management Representative on EMS](#)

Applicability

This information applies to the Associate/Assistant Laboratory Directors who are responsible for establishing environmental objectives and performance measures at relevant levels within their Directorate.

Required Procedure

This procedure is performed initially as part of the Environmental Management System (EMS) implementation and then reviewed annually, documented, and revised as needed when there are changes to the significant environmental aspects of Directorate/Department/Division processes, or changes in the Laboratory Critical Outcomes, Objectives, and Performance Measures. The Management Representative on EMS is responsible for coordinating the execution of this procedure.

Step 1	<p>Management Representative on EMS, Cross Sectional Team, or Designee: Review the following items:</p> <ul style="list-style-type: none"> • Laboratory Critical Outcomes, Objectives, and Performance Measures that are related to the Environmental Management System (i.e., community outreach, operational excellence, and/or environmental cleanup); • See Establishing Environmental Objectives and Suggested Targets on the EMS Representatives Page; • Directorate/Department/Division significant environmental aspects; • The compliance status of Directorate/Department/Division processes that can significantly impact the environment; • Improvement and/or pollution prevention opportunities for Directorate/Department/Division processes as identified by assessment of current performance; • Environmental concerns of stakeholders.
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Step 2	<p>Management Representative on EMS, Cross Sectional Team, or Designee: Identify Laboratory Objectives and any Directorate/Department/Division goals that are applicable to the significant environmental aspects of Directorate/Department/Division processes and consistent with BNL's commitments on: (a) pollution prevention; (b) regulatory compliance; (c) community outreach; (d) cleanup; and (e) continual improvement.</p>
Step 3	<p>Management Representative on EMS, Cross Sectional Team, or Designee: Propose a set of Directorate/Department/Division objectives (referred to as "targets" in ISO 14001) and performance measures that support achievement of the Laboratory objectives, yet are specific to the organization's processes. Choose specific and measurable (where practical) targets and performance measures that address one or more of the following:</p> <ul style="list-style-type: none"> • Achieve and/or maintain compliance with applicable regulatory requirements; • Reduce environmental impacts through implementation of technologically, financially, and operationally feasible improvements; and/or • Can result in meaningful improvements to environmental performance by improving a specific element of the EMS. <p>Example:</p> <p>Laboratory Objective: Reduce waste generation by 50% by fiscal year 2000.</p> <p>Directorate/Department/Division Target: Reduce hazardous waste generation in the XYZ process by 10% each year.</p> <p>Performance Measure: Volume of hazardous waste generated.</p> <p>Note: For more information on objectives, targets, and performance measures, refer to the exhibit Guidelines for Developing Objectives and Performance Measures in the Integrated Assessment Subject Area.</p>
Step 4	<p>Management Representative on EMS, Cross Sectional Team, or Designee: Present the set of objectives, targets, and performance measures to the relevant management/staff and obtain concurrence.</p> <p>Note: If concurrence is not possible, the manager who is accountable for achieving the objective makes the final decision.</p>
Step 5	<p>Management Representative on EMS, Cross Sectional Team, or Designee: Document the objectives, targets, and performance measures that apply to Directorate/Department/Division processes.</p> <p>Note: Use existing systems to document objectives, targets, and performance measures, such as the Directorate/Department/Division Self-Assessment Program, or the Environmental Management Program Planning Form.</p>
Step 6	<p>Management Representative on EMS, Cross Sectional Team, or Designee: Develop an action plan to achieve Directorate/Department/Division objectives and identify the following</p>

	<p>and identifying the following:</p> <ul style="list-style-type: none"> • Actions required to achieve compliance and/or improve performance (e.g., install engineered controls, document and implement standard operating procedures, perform preventative maintenance, maintain records, implement required training, communicate environmental requirements to vendors/contractors); • Person/organizational unit responsible for implementing the action; • Schedule of actions with due dates; • Resources (source of funding and estimates as required). <p>Communicate the action plans to the affected line personnel and to the Environmental and Waste Management Services Division Manager.</p> <p>Note: Use existing Laboratory systems such as the ESH Management Plan process (i.e., Activity Data Sheet [ADS] for ESH and infrastructure projects); and/or the Pollution Prevention Program process to document action plans if requesting Laboratory or special funds to implement actions. Directorate/Department/Division planning systems such as the Self-Assessment Program, or the Environmental Management Program Planning Form, can be used for documenting action plans when utilizing operating funds.</p> <p>Note: Refer to the exhibit Documenting Environmental Management System (EMS) Objectives/Targets and Environmental Management (EM) Programs to verify that all requirements for ISO 14001 are covered on either the Environmental Management Program Planning Form, or in the Self-Assessment Program.</p>
Step 7	<p>Management Representative on EMS, Cross Sectional Team, or Designee: Use existing Laboratory systems, and/or Directorate/Department/Division systems, as applicable, to track, evaluate, and communicate to management progress towards meeting the objectives and targets.</p> <p>Note: Environmental professionals such as an Environmental Compliance Representative or Environmental Subject Matter Expert can assist and advise line personnel on established Laboratory systems that document, track, and evaluate environmental improvement projects. Quality Professionals can assist and advise on the systems that document, track, and evaluate overall improvement projects.</p>

Guidelines

Involve relevant staff members, environmental professionals, and managers in a team approach when establishing objectives and performance measures to ensure alignment with management expectations, commitment to implementation, and consideration of critical success factors.

Management concurrence on Directorate/Department/Division objectives can be demonstrated by a number including, but not limited to

Meeting notes, presentations, or minutes.

- meeting notes, presentations, or minutes;
- Signature on Environmental Management Program documents;
- Incorporation into a Directorate/Department/Division document that is issued by the appropriate manager or that has management approval, such as a self-assessment plan.

Communicate progress towards meeting the objectives and targets to relevant managers and staff within the Directorate/Department/Division via established channels, such as management/staff meetings, performance trending and reporting, and newsletters.

References

[EMS Representatives Page](#) (*Limited Access)

[Integrated Assessment](#) Subject Area

*Access Limited to BNL Staff and Authorized Non-BNL Staff


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3. Establishing and Implementing Operational Controls

Effective Date: **April 2001**

Point of Contact: [Management Representative on EMS](#)

Applicability

This information applies to line managers who are responsible for establishing operational controls for processes that have a significant aspect that impacts the environment.

Required Procedure

Operational Controls are established to maintain regulatory compliance, avoid nonconformances in the Environmental Management System (EMS), and assist the Directorate/Department/Division personnel in achieving the environmental objectives and performance measures.

This procedure is performed initially as part of EMS implementation and then reviewed periodically and revised as needed when there are changes to processes that have a significant environmental aspect. The Management Representative on EMS is responsible for coordinating the review of existing controls as described in this procedure, using the technical expertise of line personnel, Environmental Compliance Representatives, and Environmental Subject Matter Experts (SMEs) as needed.

Step 1	<p>Management Representative on EMS, Cross Sectional Team, or Designee: Review the following:</p> <ul style="list-style-type: none"> • The compliance status of Directorate/Department/Division processes that can significantly impact the environment; • Improvement and/or pollution prevention opportunities for Directorate/Department/Division processes as identified by assessment of current performance; • Status of implementation of the following types of operational controls, as applicable: <ul style="list-style-type: none"> ◦ Engineered controls;
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	<ul style="list-style-type: none"> ○ Standard operating procedures; ○ Operational controls (walkthroughs, inspections, etc.); ○ Maintenance; ○ Emergency Preparedness and Response; ○ Training requirements; ○ Monitoring and measurement (effluent/emission monitoring equipment; performance trends); ○ Records. <ul style="list-style-type: none"> ● Identify processes performed by guests, visitors, contractors, or vendors, and the status of established controls associated with these. <p>Note: Utilize existing evaluation of processes conducted as part of the associated process assessment or conduct one in accordance with the Process Assessment Subject Area.</p>
Step 2	<p>Management Representative on EMS, Cross Sectional Team, or Designee: Evaluate the adequacy of established controls in meeting regulatory requirements, preventing environmental impacts, and achieving the Directorate/Department/Division objectives and performance measures. Identify needed corrective actions or improvements. Prioritize and incorporate in Environmental Management Program planning processes.</p> <p>Note: Use existing Laboratory systems, such as the Management Plan process, ESH Management Plan process (i.e., Activity Data Sheet (ADS) for ESH and infrastructure projects), and/or the Pollution Prevention Work Planning process, to document requests for Laboratory or special funds to implement environmental improvements. Directorate/Department/Division planning systems and/or the Environmental Management Program Planning Form are used for documenting action plans when using operating funds. Environmental professionals, such as Environmental Compliance Representatives or SMEs can assist and advise line personnel on available Laboratory programs.</p>
Step 3	<p>Management Representative on EMS, Cross Sectional Team, or Designee: Ensure that personnel responsible for implementation, including guests, visitors, contractors, or vendors, understand their responsibilities for operational controls.</p>
Step 4	<p>Management Representative on EMS, Cross Sectional Team, or Designee: Document the results of this evaluation and use for the EMS documentation.</p>

Guidelines

Involve relevant staff members, environmental professionals, and managers in a team approach when evaluating adequacy of operational controls to ensure alignment with management expectations and commitment to implementation.

Use the [Operational Controls Form](#) or its equivalent to document the operational controls associated with a process.

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BNL Criteria for Significant Aspects

Effective Date: **May 2000**

Point of Contact: [Management Representative on EMS](#)

The following table provides the environmental aspects of BNL operations and the criteria that have been determined to represent "significance" for BNL. These criteria were determined to be significant because of the current state of environmental performance, regulatory requirements, and community/stakeholder concerns. The "core" aspects are listed first, followed by "facility-specific" aspects.

ENVIRONMENTAL ASPECT	CRITERIA FOR SIGNIFICANT ASPECTS
Core Environmental Aspects	
Regulated Industrial Waste Generation	a) Any amount of regulated industrial waste generation.
Hazardous Waste Generation	a) Any amount of hazardous waste generation.
Radioactive Waste Generation	a) Any amount of radioactive waste generation.
Mixed Waste Generation	a) Any amount of mixed waste generation.
Regulated Medical Waste Generation	a) Any amount of regulated medical waste generation.
Atmospheric Discharges	a) Any process that requires a CERCLA equivalency permit or inclusion in the Title V permit as an emission unit, or contributes to a regulated emission point. b) Operations or activities that use engineering controls to reduce hazardous air pollutant or radionuclide emissions. c) Radioactive emissions that require monitoring (continuous or confirmatory) by 40 CFR 61 Subpart H of the National Emission Standards for Hazardous Air Pollutants (NESHAPS).
Liquid Discharges	a) Radionuclides that are detectable at the point of discharge from the facility. b) Discharges of any of the chemicals listed on the exhibit BNL State Pollutant Discharge Elimination System (SPDES) Permit Chemicals . c) Operations or activities that use engineering controls to reduce the quantity or concentration of pollutant

	<p>reduce the quantity or concentration of pollutant.</p> <p>d) Existence of underground injection control devices under the responsibility of the owner organization as specified in the Underground Injection Control Subject Area.</p>
Storage or Use of Chemicals or Radioactive Materials (potential for accidental release or contamination)	<p>a) Storage or use of chemicals or radioactive materials requiring engineering controls specified in the Storage and Transfer of Hazardous and Nonhazardous Materials Subject Area.</p> <p>b) System configuration requires back-flow prevention in accordance with the protection of the Drinking Water Subject Area.</p> <p>c) Transportation of chemicals or dispersible radioactive materials that meet the criteria for the Transfer of Hazardous Materials Onsite Subject Area, Transfer of Radioactive Materials Onsite Subject Area, Transportation of Hazardous Materials Offsite Subject Area, and Transportation of Radioactive Materials Offsite Subject Area.</p> <p>d) Storage or use of PCBs as specified in the PCB Management Subject Area.</p> <p>e) Any underground pipes or ducts that contain chemical and/or radioactive material/contamination.</p> <p>f) Storage or use in quantities capable of resulting in a spill, as defined in the Spill Response Subject Area.</p>
Water Consumption	<p>a) Total organizational water consumption greater than 650,000 gallons per day.</p> <p>b) Continuous (24 hrs/day), permanent (to continue for the foreseeable future) once-through water use greater than 4 gallons per minute (gpm) that discharges to the Sanitary Sewer System.</p> <p>c) Daily (8 hrs/day), permanent, once-through water use greater than 10 gpm that discharges to the Sanitary Sewer System.</p> <p>d) Continuous use greater than 10 gpm, or daily use greater than 15 gpm for a period greater than 60 days that discharge to the Sanitary Sewer System.</p>
Power Consumption	<p>a) Total Organizational Power Consumption Greater than 58 M KWh/yr.</p>
Facility-specific Environmental Aspects	
Historical/Cultural Resources*	<p>a) Any modification to structures that are determined to be "Eligible for listing on the National Register of Historic Places" (BGRR, HFBR, and WWI trenches and foundations).</p> <p>b) Proposed modification to known archaeologically significant area(s) or discovery of archaeologically significant material (lithic scatter, bone, foundations, etc.)</p>
Sensitive/Endangered Species And Sensitive Habitats (including Pine Barrens)	<p>a) Potential for habitat disturbance, harm, or harassment within 850 feet of a critical habitat (<i>recharge basins, vernal pools, natural and manmade ponds and waterways</i>)</p>

(including Time Barriers)	<p>poors, natural and manmade ponds and waterways).</p> <p>b) Activity within 100 feet of a regulated wetland (<i>that is already not identified as a critical habitat</i>).</p> <p>c) Activity within ½ mile of the Peconic River.</p> <p>d) Activity affecting five or more acres of undeveloped land.</p>
Environmental Noise	a) Exceed ordinance levels (7 am -10 pm: 55 dBA; 10 pm - 7 am: 50 dBA [20 min. average]) at property boundary or off-site location.
Historical Contamination (groundwater, soil)	a) Pre-existing contamination (radiological or nonradiological) causing remedial activities resulting in costs in excess of \$50,000.
Soil Activation	a) Any soil activation.
Transuranic Waste (TRU)	a) Generation or potential to generate any radioactive waste stream classified as transuranic (TRU) waste (i.e., contains greater than 100 nanocuries per gram of transuranium isotopes).
Other	<p>a) Any other compliance requirement specific to an organization or aspect that could impact the environment (e.g., asbestos research, odor, biological waste).</p> <p>b) Any issue identified in the Facility Review Project as (1) "significant finding" or "lesser issue," or (2) BNL risk rank of #1 - 3.</p>

*Although not "formally evaluated," identify the applicability of the following criteria with an "x" on the aspects spreadsheet: Any modifications to the following structures that have been identified as "historically significant" in the BNL Cultural Resources Management Plan (i.e., Medical Reactor, Chemistry Building, Berkner Hall, The Center [Building 30], Alternating Gradient Synchrotron [AGS], and Building 120 [2-story WWII barracks section]).

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BNL State Pollutant Discharge Elimination System (SPDES) Permit Chemicals

Effective Date: **May 2000**

Point of Contact: [Management Representative on EMS](#)

Copper	Lead
Mercury	Nickel
Silver	Zinc
Ammonia	1,1,1 - Trichloroethane
Methylene Chloride	Toluene
2- Butanone	Cyanide
Oil & Grease	Chloroform
Bromodichloromethane	HEDP
Tolytriazole	DBNPA
1,1,1 - Dichloroethene	Iron

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Documenting Environmental Management System (EMS) Objectives/Targets and Environmental Management (EM) Programs

Effective Date: **April 2001**

Point of Contact: [Management Representative on EMS](#)

Documenting Environmental Management System (EMS) Objectives/Targets and Environmental Management (EM) Programs is provided as a [Word](#) file.

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Documenting Environmental Management System (EMS) Objectives/Targets and Environmental Management (EM) Programs

The following table provides a cross-reference between two mechanisms available to the EMS Representative for documenting EMS objectives/targets and EM Programs.

Environmental Management Program Planning Form		Description of Required Element	Equivalent Self-Assessment Program Requirement*
Number	Subheading		
	Activity/process and/or significant environmental aspects	Specify whether the EM Program applies to a particular activity/process within the organization, or if it applies throughout the organization for a particular significant aspect.	<i>Although not specifically required, it can be included through direct reference in target statements, or included in the Self-Assessment Overview section, or included in a stand-alone appendix with other information not specifically required in a Self-Assessment Program.</i>
1	Objectives	Link to a Laboratory-level Critical Outcome/Objective that the Directorate/Department/Division is supporting; typically related to compliance, pollution prevention, or improvement of an EMS element. (Environmental Objectives and Suggested Targets on the EMS Representatives Page may also be used to help set Objectives.)	<i>Although not specifically required, it can include applicable Laboratory Critical Outcome/Objective statement to show linkage and demonstrate flow down to organization objectives.</i>
2	Targets	Translate the high-level objectives to Directorate/Department/Division-level goals that are pragmatic and specific to the particular process or aspect. (Environmental Objectives and Suggested Targets on the EMS Representatives Page may also be used to help set Targets.)	Organizational objective
3	Performance Measures	Identify the indicators relating to the targets that can and will demonstrate whether the organization successfully achieved the target, and ultimately the objective.	Organizational measure
4	Environmental Improvement/Compliance Program Description	Summarize the improvement and/or compliance initiative that the Directorate/Department/Division will be undertaking that has been designed to achieve	<i>Although not specifically required, it can be included in the Approach section, or included in the Self-Assessment Overview section, or included in a stand-alone appendix with other information</i>

		the targets, and ultimately the objective. Do not describe the operations, but instead focus on the change or actions that will be implemented to attain compliance with regulatory requirements, prevent pollution, or improve the EMS.	<i>not specifically required in a Self-Assessment Program.</i>
5	Funding Source and Resource Requirements	Specify the source of funding for the EM Program that was described above, clearly identifying when special funding from a Laboratory account is being requested (and the amount), when funding is coming from a Directorate/Department/Division support organization's operating account, or when funding is coming from a program account (and the amount).	<i>Although not specifically required, it can be included in the Self-Assessment Approach section (where special funding are required to be identified), or in the Self-Assessment Implementation section, or included in a stand-alone appendix with other information not specifically required in a Self-Assessment Program.</i>
	Action Plan: Tasks	List the particular tasks required to complete the initiative described in the Environmental Improvement/Compliance Program Description section.	Approach
	Action Plan: Person responsible	List the position (or person) responsible for completing each task.	Individual (or position) responsible
	Action Plan: Completion dates	List the due date for task completion.	Dates specific measures/assessments are to be accomplished
	Action Plan: Status	Either reference the tracking system where progress is being monitored and status can be determined, or indicate status (in progress, complete, on hold pending...).	Description of program/processes used to assign responsibility and tracking corrective, preventive, improvement actions

*Refer to the exhibit [Self-Assessment Program Requirements](#) in the [Integrated Assessments](#) Subject Area



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Subject Area: Identification of Significant Environmental Aspects and Impacts

Environmental Aspects and Impacts

Effective Date: **May 2000**Point of Contact: [Management Representative on EMS](#)

	Aspect	Impacts
1.	Regulated Industrial Waste Generation	<p>Mismanagement of regulated industrial wastes may</p> <ul style="list-style-type: none"> • cause soil and/or water contamination; • affect flora/fauna or human health; • affect landscape and natural beauty; • cause additional negative impacts at the point of ultimate disposal offsite; • incur fines and violations.
2.	Hazardous Waste Generation	<p>Mismanagement of hazardous wastes may</p> <ul style="list-style-type: none"> • cause soil and/or water contamination; • affect flora/fauna or human health; • affect landscape and natural beauty; • cause additional negative impacts at the point of ultimate disposal offsite; • incur RCRA fines and violations.
3.	Radioactive Waste Generation	<p>Mismanagement of radioactive wastes may</p> <ul style="list-style-type: none"> • cause soil and/or water contamination; • affect flora/fauna or human health; • affect landscape and natural beauty; • cause additional negative impacts at the point of ultimate disposal offsite; • incur PAAA fines and violations; • cause community alarm.
4.	Mixed Waste Generation	<p>Mismanagement of mixed wastes may</p> <ul style="list-style-type: none"> • cause soil and/or water contamination; • affect flora/fauna or human health; • affect landscape and natural beauty; • cause additional negative impacts at the point of

		<ul style="list-style-type: none"> • incur RCRA and/or PAAA fines and violations.
5.	Regulated Medical Waste Generation	<p>Mismanagement of regulated medical wastes may</p> <ul style="list-style-type: none"> • cause soil and/or water contamination; • affect flora/fauna or human health; • affect landscape and natural beauty; • cause additional negative impacts at the point of ultimate disposal offsite; • incur fines and violations; • cause community alarm.
6.	Atmospheric Emissions	<p>Mismanagement of airborne emissions may</p> <ul style="list-style-type: none"> • cause exposures to on-site and off-site residents that exceed CAA/NESHAPs limits; • affect flora/fauna or human health; • contribute to global warming; • incur CAA/NESHAPs fines and violations; • cause community alarm.
7.	Liquid Effluents	<p>Mismanagement of liquid effluents may</p> <ul style="list-style-type: none"> • cause contamination of surface waters or groundwater; • cause exceedance of the SPDES permit limits; • affect flora/fauna, food chain, or human health; • cause soil contamination; • incur fines and violations.
8.	Storage or Use of Chemicals or Radioactive Materials (potential for accidental release)	<p>Accidental spillage, leakage, or mismanagement of chemicals or radioactive materials in storage or use may</p> <ul style="list-style-type: none"> • cause contamination of surface waters or groundwater; • cause exceedance of the SPDES permit limits; • cause soil contamination; • affect flora/fauna, food chain, or human health; • incur fines and violations; • cause contamination of potable water (back-flow prevention).
9.	Water Consumption	<p>Excessive water consumption may</p> <ul style="list-style-type: none"> • deplete the sole source aquifer; • initiate hydraulic pressure on the aquifer, which may cause movement of existing pollutant plumes (offsite).
10.	Power Consumption	<p>Excessive power consumption may</p> <ul style="list-style-type: none"> • deplete natural resources; • contribute to greenhouse gas emissions;

		<ul style="list-style-type: none"> • cause environmental impacts at location of power generation.
11.	Historical Monuments/ Cultural Resources	<p>Mismanagement of historical monuments/cultural resources</p> <ul style="list-style-type: none"> • may damage or disturb historically significant structures or known archaeologically significant area(s); • may prevent or impede the discovery of archaeologically significant material.
12.	Sensitive/Endangered Species And Sensitive Habitats (including Pine Barrens)	<p>May damage or disturb</p> <ul style="list-style-type: none"> • protected wetlands, flora; • endangered species; • water flow.
13.	Environmental Noise	May cause community concern.
14.	Historical Contamination (groundwater, soil)	<p>May</p> <ul style="list-style-type: none"> • affect flora/fauna or human health; • affect landscape and natural beauty; • contaminate drinking water supplies onsite and offsite; • cause community alarm.
15.	Soil Activation	<p>May</p> <ul style="list-style-type: none"> • cause soil and/or water contamination; • affect flora/fauna or human health; • cause community alarm.
16.	Transuranic Waste (TRU)	<p>A) Generation of TRU may cause negative impacts because there is no disposal pathway at this time. B) Mismanagement of TRU wastes may</p> <ul style="list-style-type: none"> • cause soil and/or water contamination; • affect flora/fauna or human health; • affect landscape and natural beauty; • incur PAAA fines and violations; • cause community alarm.

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Subject Area: *Identification of Significant Environmental Aspects and Impacts*

Flowchart for Identifying Significant Aspects and Impacts

Effective Date: **May 2000**

Point of Contact: [Management Representative on EMS](#)

The Flowchart for Identifying Significant Aspects and Impacts is provided as a [PDF](#) file.

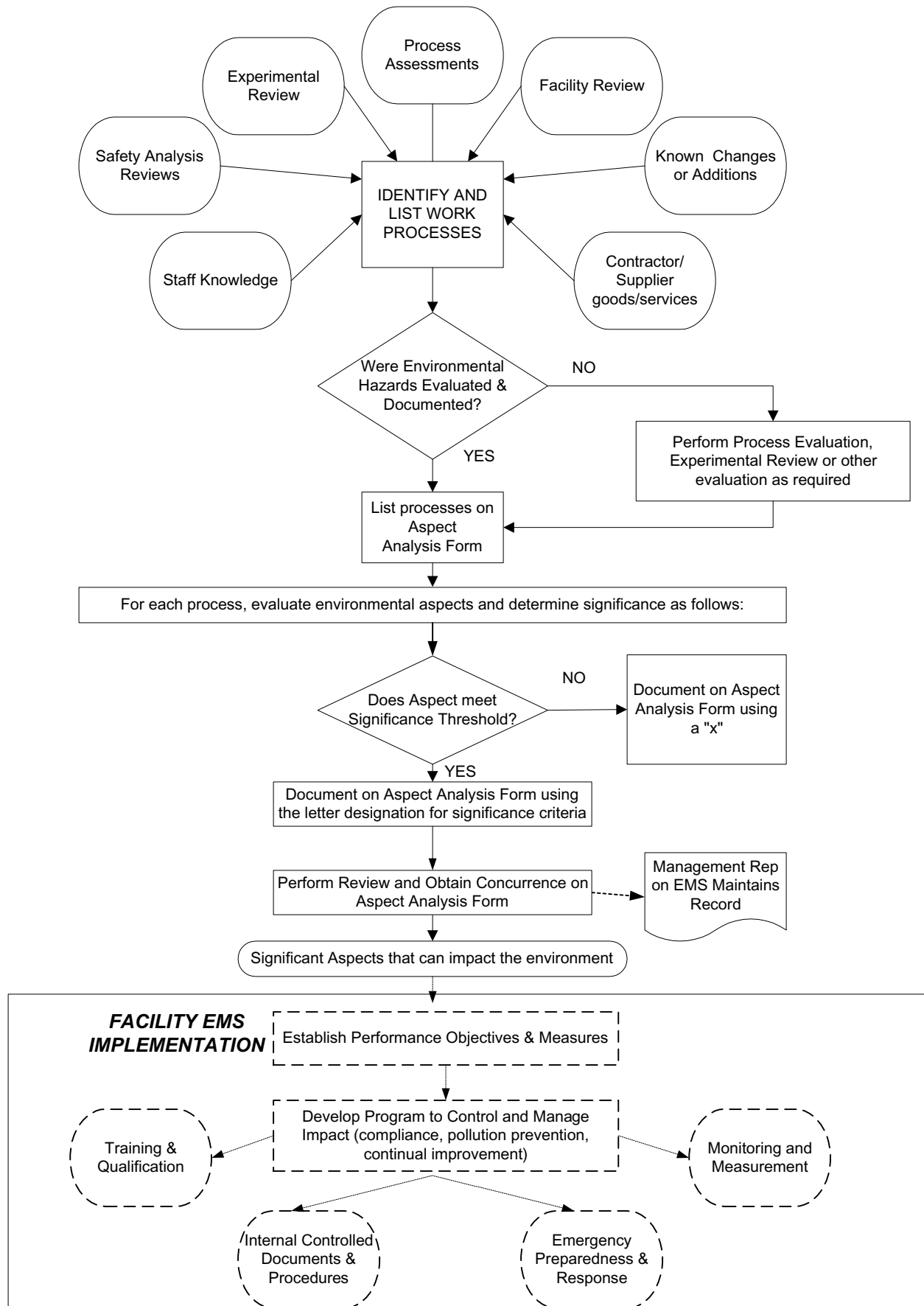
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FLOWCHART FOR IDENTIFYING SIGNIFICANT ASPECTS AND IMPACTS




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Subject Area: **Identification of Significant Environmental Aspects and Impacts**

Laboratory Processes that have the Potential to Impact the Environment

Effective Date: **May 2000**

Point of Contact: [Management Representative on EMS](#)

Industrial Processes	
a.	Construction/Demolition (including lead and asbestos abatement)
b.	Cooling Water Systems (ion exchange, filtration, cooling towers, etc.)
c.	Electronics Manufacture, Assembly, and Repair
d.	HVAC Systems (heating, ventilation, air conditioning)
e.	Machine Shop Operations
f.	Mechanical Assembly Operations
g.	Parts Washing/Metal Cleaning Operations
h.	Photographic Operations (including conventional and x-ray)
i.	Plating Operations
j.	Utilities (water, sewage, electric, and steam system operation/maintenance)
k.	Wood Working

Site Maintenance Processes	
a.	Custodial Services
b.	Equipment and Hydraulic System Maintenance
c.	Grounds Maintenance (including equipment maintenance, fertilizer, pesticide, and herbicide application)
d.	Lighting and Alarm System Maintenance (bulbs, batteries, ballasts)
e.	Painting
f.	Pest Control Operations
g.	Vehicle and Heavy Equipment Maintenance

Other Processes	
a.	Accelerator Operations
b.	Medical Waste Operations
c.	Petroleum Bulk Storage
d.	Radioactive Material Storage (outside storage of activated materials)
e.	Underground Storage Tanks
f.	Waste Storage and Processing (90-day areas, waste tanks)
g.	Transport of Radioactive or Hazardous Materials, Onsite and Offsite

Research Processes	
a.	Animal Research
b.	Chemical Synthesis
c.	Detector Fabrication
d.	Dispersible Tracer Radioactive Material Use
e.	Experimental Target Irradiation
f.	Material Activation
g.	Materials Research
h.	Processing Irradiated Targets

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Subject Area: *Identification of Significant Environmental Aspects and Impacts*

Environmental Aspect Analysis Form

Effective Date: **May 2000**

Point of Contact: [Management Representative on EMS](#)

The Environmental Aspect Analysis Form is provided as an [Excel](#) file. This form is to be incorporated in the Directorate EMS manual and aspects/impacts maintained in directorate files.

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[illegible]

Note: If the aspect is not present, leave the cell blank. If the aspect is present but does not meet the significance criteria listed in the exhibit, "Criteria for Environmental Aspects," put an "X" in the cell. If the aspect meets one or more of the significance criteria listed in the exhibit, enter the letter designation for the applicable criteria in the cell.

¹ Facility Review Project, Phase II Project Number, or other organization reference number

² Organizational significance criteria

³ Equipment uses 440 Vac or greater

BNL ENVIRONMENTAL MANAGEMENT SYSTEM
ENVIRONMENTAL MANAGEMENT PROGRAM PLANNING FORM

ENVIRONMENTAL MANAGEMENT PROGRAM FOR: Activity/Process: _____ and/or Significant Aspect(s): _____	Completed by: _____ Date: _____
--	--

1. Objective(s):

2. Target(s):

3. Performance Measure(s):

4. Environmental Program Description:

5. Funding Source/Budget:

6. Action Plan For Achieving Objectives/Targets – Structure, Authorities, Responsibilities

TASKS	PERSON /POSITION RESPONSIBLE	COMPLETION DATES	STATUS*

* Reference tracking system used to monitor progress and status

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Subject Area: **Identification of Significant Environmental Aspects and Impacts**

Operational Controls Form

Effective Date: **May 2000**

Point of Contact: [Management Representative on EMS](#)

The Operational Controls Form is provided as a [Word](#) file.

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**BNL ENVIRONMENTAL MANAGEMENT SYSTEM
OPERATIONAL CONTROLS FORM**

OPERATIONAL CONTROL FOR SIGNIFICANT ENVIRONMENTAL ASPECTS: _____	COMPLETED BY: _____ DATE: _____
1. Operation(s): 	
2. Activity/Activities: 	
3. Operational Controls (technological, operational, procedural operating criteria): 1) 2) 3) 	
4. Maintenance Plan(s): 1) 2) 3) 	

BNL ENVIRONMENTAL MANAGEMENT SYSTEM OPERATIONAL CONTROLS FORM

OPERATIONAL CONTROL FOR SIGNIFICANT ENVIRONMENTAL ASPECTS: <hr style="border: 0; border-top: 1px solid black; margin-top: 5px;"/>	COMPLETED BY: <hr style="border: 0; border-top: 1px solid black; margin-top: 5px;"/> DATE: <hr style="border: 0; border-top: 1px solid black; margin-top: 5px;"/>	
5. Actions to be taken if controls fail: 1) 2) 3)		
6. Records: a. This form will be retained as a record; b. Maintenance records; c. Record of actions taken in cases of control failures; d. Other.		
7. Responsibilities: (a) to ensure controls are in place; (b) to ensure controls keep working; (c) to take action when controls fail; (d) to create and keep records relative to operational controls		
Name	Responsibility	
8. Training:		
Name	Training	Date



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Subject Area: **Identification of Significant Environmental Aspects and Impacts**

Definitions: Identification of Significant Environmental Aspects and Impacts

Effective Date: **May 2000**

Point of Contact: [Management Representative on EMS](#)


Term	Definition
annually	Performance at a rate of once every year with intervals between performances not to exceed 15 months.
detectable	The presence of a contaminant at a concentration equal to or greater than the detection limit for the contaminant.
environment	Surroundings in which an organization operates, including air, water, land, natural resources, flora, fauna, humans and their interrelation.
environmental aspect	An element of an organization's activities, products, or services that can interact with the environment. Examples of environmental aspects are included in the Environmental Aspects and Impacts exhibit.
environmental impact	Any change to the environment, whether adverse or beneficial, wholly or partially resulting from an environmental aspect. Examples of environmental impacts are included in the Environmental Aspects and Impacts exhibit.
objective	Overall (environmental) goal, arising from the environmental policy, that an organization sets itself to achieve, and which is quantified where practicable.
performance measure	Detailed performance requirement, quantified where practicable, applicable to the organization or parts thereof, that arises from the (environmental) objectives and that needs to be set and met in order to achieve those objectives.
processes	Industrial and/or experimental research activities, products, or services performed by BNL staff, guests, or contractors/vendors.
regulated industrial waste generation	Industrial wastes regulated under New York State, or the state to which we transport our wastes for disposal.

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Revision History: Identification of Significant Environmental Aspects and Impacts

Point of Contact: [Management Representative on EMS](#)

Revision History of this Subject Area

Date	Description	Management System
April 2001	<p>This revision reflects the following changes:</p> <ul style="list-style-type: none">• The option to use the Self-Assessment Program for documenting what was previously documented only on the Environmental Management Program Planning Form.• The Environmental Management Program Planning Form was simplified.• The addition of the "Documenting Environmental Management System (EMS) Objectives/Targets and Environmental Management (EM) Programs" exhibit for guidance.• The elimination of the Aspects Summary Form.• Updated to reflect applicable references to the recently issued Integrated Assessment Subject Area.• Edited for consistency and clarity.	Environmental Management System
May 2000	<p>Both Laboratory-wide and facility-specific environmental hazards (i.e., "aspects") were identified in the original publication of this subject area; however, "significance criteria" for the facility-specific hazards were not formally documented in the subject area. Through experience gained by the EMS implementation at the Laboratory, these criteria were identified, field-tested, and</p>	Environmental Management System

	documented. This effort has resulted in a revision to the exhibits "BNL Criteria for Significant Aspects" and "Environmental Aspects and Impacts." Associated editorial changes for consistency and clarity also were made to the following sections: the introduction, contents, and procedure entitled "Identification of Significant Environmental Aspects and Impacts."	
March 1999	This subject area was developed as part of the Environmental Management System Project to satisfy contract requirements to implement ISO 14000.	Environmental Management System

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